

WHAT IS CLAIMED IS:

1. A substantially pure polypeptide comprising an amino acid sequence at least 60% identical to SEQ ID NO:20 or 25, wherein the polypeptide has a G protein-coupled receptor protein activity.
- 5 2. The polypeptide of claim 1, wherein the G protein-coupled receptor protein activity is binding to histamine.
3. The polypeptide of claim 1, wherein the amino acid sequence is at least 70% identical to SEQ ID NO:20 or 25.
- 10 4. The polypeptide of claim 1, wherein the amino acid sequence is at least 80% identical to SEQ ID NO:20 or 25.
- 15 5. The polypeptide of claim 1, wherein the amino acid sequence is at least 90% identical to SEQ ID NO:20 or 25.
- 20 6. A substantially pure polypeptide comprising the sequence of SEQ ID NO:20 or 25, or a fragment thereof that a) has a G-protein receptor coupled protein activity, or b) is immunogenic.
7. A substantially pure polypeptide encoded by a nucleic acid that hybridizes under high stringency conditions to the sequence of SEQ ID NO:21 or 26, wherein the polypeptide has a G protein-coupled receptor protein activity.
- 25 8. An isolated nucleic acid encoding the polypeptide of claim 1.
9. An isolated nucleic acid encoding the polypeptide of claim 6.
- 30 10. An antibody that specifically binds to the polypeptide of SEQ ID NO:20 or 25.

11. An isolated nucleic acid comprising a strand that hybridizes under high stringency conditions to the sequence of SEQ ID NO:21 or 26, or the complement of SEQ ID NO:21 or 26.

5 12. The isolated nucleic acid of claim 11, wherein the nucleic acid encodes a polypeptide having a G protein-coupled receptor protein activity.

13. The nucleic acid of claim 12, wherein the G protein-coupled receptor protein activity is histamine binding.

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14. The nucleic acid of claim 11, wherein the strand is at least 15 nucleotides in length.

15. A vector comprising the nucleic acid of claim 8.

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16. A vector comprising the nucleic acid of claim 9.

17. A vector comprising the nucleic acid of claim 11.

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18. A vector comprising the nucleic acid of claim 12.

19. A vector comprising the nucleic acid of claim 14.

20. A cultured host cell comprising the nucleic acid of claim 8.

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21. A cultured host cell comprising the nucleic acid of claim 9.

22. A cultured host cell comprising the nucleic acid of claim 11.

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23. A cultured host cell comprising the nucleic acid of claim 12.

24. A cultured host cell comprising the nucleic acid of claim 14.

25. An antibody that specifically binds to the polypeptide of claim 1.

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26. A method of producing a polypeptide, the method comprising culturing the cultured host cell of claim 20 under conditions that permit expression of the polypeptide in the cell.

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27. A method for identifying a compound that modulates a G protein-coupled receptor activity, comprising the steps of:

a) contacting a polypeptide of claim 1, or a cell transected with a nucleic acid encoding the polypeptide of claim 1, with a test compound;

b) determining whether the test compound modulates a G protein-coupled receptor activity of the polypeptide or cell, thereby identifying a compound that modulates a G protein-coupled receptor activity.

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28. The method of claim 27, wherein the G protein-coupled receptor activity is histamine binding.

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29. The method of claim 27, wherein the G protein-coupled receptor activity is changing cellular cAMP concentration, changing cellular calcium concentration, activating a G protein, activating phospholipase C, or changing intracellular pH.

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30. A kit comprising the polypeptide of claim 1 and instructions for use in a method of screening.

31. A substantially pure polypeptide, the sequence of which consists of SEQ ID NO:20 or 25.

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32. An isolated nucleic acid sequence comprising SEQ ID NO:21 or 26.

33. An isolated nuclei acid sequence comprising a sequence encoding the polypeptide of SEQ ID NO:20 or 25.

5 34. A compound isolated by the method of claim 27.

35. A pharmaceutical composition comprising the compound of claim 34 as an active ingredient.